

PipeRider® Cable Modem User's Guide

HM200c/HM201c



Safety Information

Read these safety instructions before attempting to install or operate the PipeRider cable modem. Carefully read the Installation Procedures and Operating Procedures provided in this User's Guide. Be sure to comply with all NOTES, WARNINGS, and CAUTIONS.

CAUTIONS AND WARNINGS



For indoor home and office use only!



There are no serviceable parts inside the unit. DO NOT OPEN!



Do not set liquids on or near the cable modem!



Before cleaning the modem, unplug the power cord!



When cleaning the modem, use only a soft cloth dampened with water! DO NOT spray water, household chemicals, or other liquids directly onto the modem.



Any changes or modifications to this product not expressly approved by the manufacturer could void any assurances of Safety or Performance and could result in violation of Part 15 of the FCC Rules.



When installing the modem, ensure that the vents are not blocked!



Warranty is voided if unit is opened!

PRODUCT CARE AND MAINTENANCE

The PipeRider cable modem is a highly sophisticated electronic device. To prevent damage to the modem, follow the rules below.

- Do not expose the modem to liquid or moisture.
- Do not expose the modem to extreme high or low temperatures.
- Do not expose the modem to lit candles, cigarettes, open flames, etc.
- Do not drop, throw, or bend the modem since rough treatment could damage it.
- Do not paint the modem as the paint could prevent normal use.
- Do not attempt to disassemble the modem; a broken warranty seal will void the warranty. In the event that the modem requires service, contact your Service Provider.
- Do not use any accessories other than those approved by Ericsson. Failure to do so may result in loss of performance, damage to the product, fire, electric shock or injury, and will void the warranty.
- Keep the modem in a clean and dust-free environment.
- Store the Support CD in a safe place for future reference.

PLACEMENT

- The cable modem should be mounted or placed in a safe location with plenty of ventilation. To prevent the restriction of airflow in and around the cable modem, do not place any object (book, magazine, paper, etc.) on top of the modem.
- If the modem is mounted on the wall, the modem must be securely attached. If the modem is not securely mounted to the wall, the modem may fall and cause injury to someone or damage the product.

CABLES

- The cables connected to the cable modem should be routed in a manner that provides a safe environment and protects the cables. Do not route the cables in a walkway or in a location that will crimp the cables.

POWER SUPPLY

- The PipeRider cable modem should only be used with the AC power supply provided.
- The AC power supply should be plugged into a surge protected power source. In addition, be careful not to overload the wall outlets, extension cords, etc. used to power this unit.
- The AC power supply must not be used outdoors or in damp areas.

- Connect the AC power supply only to designated power sources as marked on the product.
- To reduce risk of damage to the electric cord, remove it from the outlet by holding onto the AC adapter rather than the cord.
- Make sure the cord is positioned so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- To reduce risk of electric shock, unplug the unit from any power source before attempting to clean it.

CHILDREN

- DO NOT ALLOW CHILDREN TO PLAY WITH YOUR PIPERIDER CABLE MODEM SINCE IT CONTAINS SMALL PARTS THAT COULD BECOME DETACHED AND CREATE A CHOKING HAZARD.

PipeRider Introduction

The PipeRider® cable modem will open a whole new world of Internet use for you. Once you try it, you'll wonder how you ever got along without it!

Using your PipeRider cable modem to communicate with the Internet provides you with many [features and benefits](#) that usher you into the 21st century in style ... including speed, security, instant access, multimedia capability, and much more.

How can it do all this? In short, the PipeRider cable modem allows you to communicate with the Internet through a [cable network](#) rather than through a telephone wire. It's fast, it's secure, and it's always ready when you are.

There are two data interface connections used by the PipeRider cable modem. One connects directly to your computer, and the other hooks up to the cable that brings cable TV into your home. The cable modem translates radio frequency (RF) signals from your service provider into USB or Ethernet signals that can be understood by your computer. The modem also works in reverse when you upload information from your computer to the Internet.

Features and Benefits

In addition to the benefits provided by cable modem technology itself -- such as speed, instant Internet access, and the support of multiple computers -- the PipeRider cable modem offers even more features to make your life easier.

Installation Ease and Adaptability

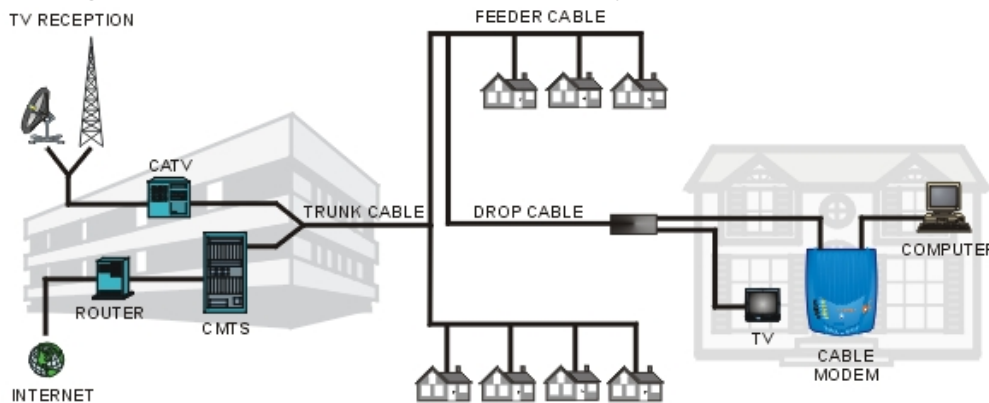
You have the option of connecting the PipeRider cable modem to your computer with either a [USB connection](#) (if supported by your computer) or an [Ethernet connection](#). The plug & play aspect of USB simplifies installation, requiring only a cable plug-in and the installation of a driver (supplied on this CD). An Ethernet connection, which requires that a Network Interface Card be installed in your computer, allows you to connect up to 15 computers (Windows only) to a single PipeRider cable modem with the use of an Ethernet hub.

Security

When you are not actively using the Internet, the [PipeLock®](#) feature enables you to suspend communication between your computer and the Internet, ensuring total security. When PipeLock is ON, the PipeRider cable modem remains logged on to the cable network, but direct communication between your computer and the Internet is blocked. This prevents outsiders from gaining access to any information on your computer. With a simple press of the PipeLock button, you can quickly and easily turn PipeLock ON and OFF. With PipeLock, there's no need to turn off your computer or your cable modem, even when you're not there.

Cable Network

The cable that provides service to your PipeRider cable modem is connected to the same cable network system that brings cable TV service to your home. A simplified version of the cable system is depicted below. Click on the diagram for a description of each of the main system components.



Headend

The Headend can be thought of as the control center of the system. The Cable TV (CATV) equipment receives signals from sources such as satellite and broadcast transmissions. These signals are processed --- amplified, converted, combined --- and then transmitted to your home. In addition to receiving TV signals, the Headend equipment includes a computer, known as the Headend Router, that controls operations between the Headend equipment and the Internet.

The Cable Modem Termination System (CMTS) is a major component of the Headend. The CMTS interfaces to the cable network, the backbone data network, and several support systems. It controls the configuration, registration, and media access of all the PipeRider cable modems under its control, and determines who gets to transmit when and for how long. The CMTS can talk to all the cable modems, but the cable modems can only talk to the CMTS. Therefore, if two cable modems need to talk to each other, the CMTS will relay the messages.

Cables Connecting the Headend to Your Home

A main "trunk" cable carries the signals out from the service provider building. The trunk cable then branches into smaller diameter "feeder" cables, which lead out into the different geographic areas serviced by the provider. An even smaller "drop" cable connects the feeder cable to the customer's home, where it is then split into two cables: one that goes to the TV (if the customer subscribes to cable TV), and another that connects directly into the PipeRider cable modem.

Many cable networks are Hybrid Fiber-Coax. This means that signals run in fiber-optical cables from the Headend through the trunk cable, and as the cable branches out, the signal is transferred to coaxial cables. This branching architecture is the most efficient method of transmitting the video and data signals from a Headend to multiple customers.

PipeRider Cable Modem's Role

The PipeRider cable modem performs many functions. It operates as a modem, a duplex tuner, an encryption/decryption device, a server, a bridge, a router, and more.

An important component of the cable modem is the Media Access Control (MAC) mechanism. The MAC runs the protocol and is positioned between the receive and transmit paths. In coordination with the CMTS, the MAC plays a major role in controlling the sharing of media. For example, the MAC controls ranging, assigns frequencies, and allocates time slots.

The PipeRider cable modem tunes to the channel that has been dedicated for data transfer. It receives the data from the service provider in the form of radio frequency (RF) signals, and translates the data to USB or Ethernet signals that can be understood by your computer. The cable modem exchanges data in two slightly different manners, depending upon whether the modem is transmitting or receiving data. One spectrum of signal frequencies is assigned for the signals that move from the Headend towards the user (downstream), and another spectrum of signal frequencies is assigned for the signals that move from the user towards the Headend (upstream). Typically, higher frequencies flow downstream and lower frequencies flow upstream.

When the downstream channel has a higher bandwidth allocation (faster data rate) than the upstream channel, this is known as an asymmetric scheme. This asymmetry is consistent with current Internet applications, which also tend to be asymmetric. For example, browsing the web and downloading videos and sound files require the transfer of significantly more data than the typical upstream activities, such as clicking on links and sending e-mail.

The PipeRider enhanced security cable modem is available in two models, one that is compliant with DOCSIS standards, and another that is compliant with Euro-DOCSIS standards. These standards define the interface requirements for cable modems providing data distribution over a cable television network. DOCSIS cable modems operate with the same connectivity technology used by cable television service providers, and are compatible with other DOCSIS cable modems and associated equipment. Likewise, Euro-DOCSIS cable modems follow similar connectivity standards, and are compatible with other Euro-DOCSIS cable modems and associated equipment.

The [Product Specifications](#) table provides detailed information on PipeRider cable modem frequencies, bandwidths, interfaces, and additional technical specification data.

Computer Interface to the PipeRider Cable Modem

There are two data-interface options for connecting the PipeRider cable modem to your computer: the USB connection and the Ethernet connection. For details regarding the installation of either of these connection types, please refer to the [Installation](#) section of this CD.

The Universal Serial Bus (USB) connection requires that your computer is equipped with a USB port, and that you are using one of the operating systems listed in the [System Requirements](#) list. To link your computer to the PipeRider cable modem with a USB connection, a specific USB driver (provided on this CD) must first be installed. This driver facilitates communication between the cable modem and the computer. Unlike an Ethernet connection, a USB connection does not allow for more than one computer to be linked to the cable modem.

The Ethernet 10BaseT connection requires that an Ethernet card be installed in your computer, and that the computer be configured for TCP/IP. When this option is used, a 10BaseT cable carries data between the cable modem and your computer. An Ethernet interface also allows you to add a hub, which is needed when more than one computer will be connected to the cable modem (Windows only).

Installation

Installation of the PipeRider cable modem is quick and easy. If you've purchased your cable modem independently (that is, not through your service provider), be sure to review the information on the [Contact Your Service Provider](#) page prior to starting the installation.

For a detailed description of the materials provided with your PipeRider cable modem, as well as additional materials you'll need for installation, please refer to the [Materials and System Requirements](#) page. The PipeRider cable modem is intended to be installed and operated using the cables and power supply provided with the modem. Ericsson does not guarantee performance with any other cables, cable extensions, or power supplies.



Read [Safety Information](#) first!



Location and Mounting

The PipeRider cable modem can be mounted on the PipeRider stand, mounted to the wall, or simply placed on a flat surface such as a desk, table, or computer. Click here for [accessory stand](#) or [wall mounting](#) instructions.

Pick a location for the cable modem that:

1. Enables you to view the LEDs on the top of the modem.
2. Allows you to reach and press the PipeLock button.
3. Does not restrict airflow around the modem.
4. Allows plenty of room for cables to be routed from the back of the cable modem without crimping the cables.

Cable Modem Installation

To view the cable modem installation instructions for your system, select your [data interface](#) type and operating system from those listed below.

- [USB for Windows 98/2000/Me](#)
- [Ethernet for Windows](#)
- [Ethernet for Macintosh](#)

Contact Your Service Provider

Step 1: Verify that your local Service Provider supports two-way cable modem access

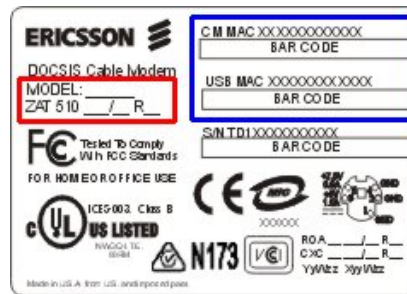
To enjoy the speed of the PipeRider cable modem, your local Service Provider must support two-way cable modem access. Two-way access allows data to flow in both the upstream and downstream directions. Since the PipeRider cable modem sends and receives data over the Service Provider's cable line, the PipeRider will not operate in a one-way (downstream only) cable modem configuration.

Downstream: Data travels from Service Provider to your computer

Upstream: Data travels from your computer to Service Provider

Step 2: Establish an Internet Access Account with your local Service Provider

When you establish an Internet Access Account, your Service Provider may request some information from the label on the bottom of the PipeRider cable modem. This information may include the **Product Number** and the **MAC Addresses**.



Step 3: Have your Service Provider install a cable modem jack at a location near your computer

Materials and System Requirements

Materials Needed

In addition to the items packaged with your cable modem, you may need some of the materials below to install your modem:

- A standard coaxial cable is required to connect the PipeRider cable modem to the cable jack in your house. The length of the cable is determined by the distance between the cable modem and the cable jack.
- If you choose to mount your cable modem on the wall, wall mounting hardware will be required.
- In many areas, a surge protector is recommended to help protect the modem from power surges.

System Requirements

To support operation of the cable modem, your computer configuration, operating system, and data interface port must meet the requirements below.

Computer Requirements

Recommended Minimum Configuration:

- 133 MHz Processor
- 16 Megabytes RAM
- CD-ROM Drive
- The Operating System requirement is dependent upon your data interface connection -- either USB or Ethernet.

USB

Windows 98

Windows 98 SE

Windows 2000/Me

Ethernet

Windows 95 or higher

Windows NT 4.0 or higher

Macintosh System 7.5 or higher

Data Interface Port

The PipeRider cable modem communicates with your computer through a data interface port. Your computer must be equipped with one of two data interface options, either USB or Ethernet.

Most computers today are shipped with a Universal Serial Bus (USB) port. The plug & play aspect of USB simplifies installation, requiring only a cable plug-in and the installation of a driver (supplied on this CD). This driver, which is installed during cable modem [installation](#), facilitates communication between the cable modem and the computer. A USB connection allows for only one computer to be connected to the cable modem.

An Ethernet connection requires that a Network Interface Card (NIC) be installed in your computer, and that your computer be configured for TCP/IP. When this option is used, a 10BaseT data interface cable carries data between the cable modem and the computer. An Ethernet interface, used in conjunction with a hub, allows you link up to 15 computers to a single PipeRider cable modem (Windows only).

PipeRider Stand Mounting Procedure

Step 1

Insert a stand post into each of the U-shaped grooves in the stand base. Each post will snap when secured in place.



Step 2

Align and insert latches on each post with slots on bottom of cable modem. Slide modem down to lock in place.



Wall Mounting Procedure

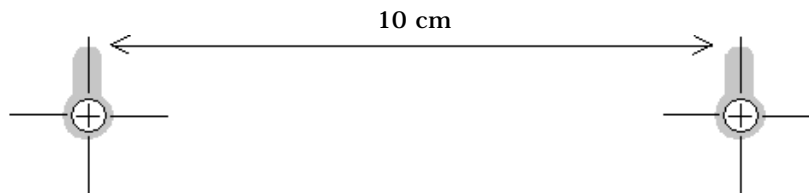
Step 1.

The PipeRider cable modem can be mounted on the wall using two screws and the two mounting slots on the bottom of the unit. When mounted, the orientation of the cable modem will be as shown below.



Step 2.

Use the template below to mark the screw locations.



Step 3.

Insert and secure screws to the wall. The screws should not be secured flush to the wall. Leave a gap of approximately 0.6 cm from the wall surface to the bottom of the screw head.

Step 4.

Slip the PipeRider slots over the screw heads and pull down until the unit is seated securely. A slight adjustment to the screws may be necessary to provide a snug fit to the wall.

Computer Interface to Cable Modem

There are two data-interface options for connecting the PipeRider cable modem to your computer: a USB connection and an Ethernet connection. For details regarding cable modem installation using either of these interfaces, please refer to the [Installation](#) section of this CD.

The Universal Serial Bus (USB) connection requires that your computer is equipped with a USB port, and that you are using one of the operating systems listed on the [System Requirements](#) list. To link the computer to the cable modem using a USB interface, a specific USB driver (provided on this CD) must first be installed. This driver facilitates communication between the cable modem and the computer. A USB connection allows for only one computer to be linked to the cable modem.

The Ethernet connection requires that a Network Interface Card (NIC) be installed in your computer, and that your computer be configured for TCP/IP. When an Ethernet interface is used, a 10BaseT cable carries data between the cable modem and the computer. An Ethernet interface, used in conjunction with a hub, allows you link up to 15 computers to a single PipeRider cable modem (Windows only).

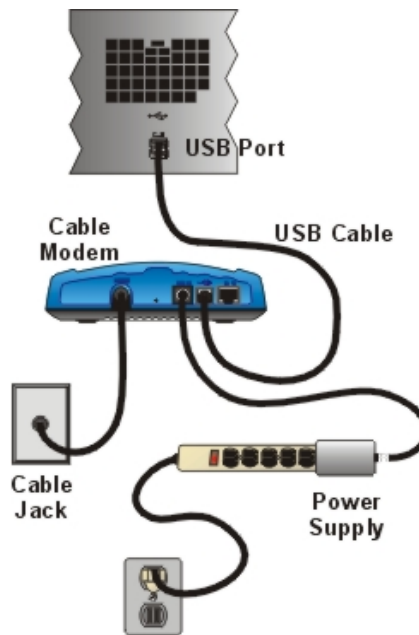
Installation: USB for Windows 98/2000/Me

Follow the steps below in the order given:

1. Connect the coaxial cable between the service provider's cable jack and the cable connector on the back of the modem. Be sure not to bend the center wire on the connector. Hand tighten both connectors.
2. Plug the DIN connector of the power supply cable into the Power connector on the back of the cable modem. Plug the power supply into a surge protected power source.
3. The USB drivers are located on this PipeRider Support CD. The CD must be in the CD-ROM drive when the USB cable is connected.

Insert the square plug of the USB cable into the USB port on the back of the cable modem. Insert the rectangular plug of the USB cable into the USB port on the back of the computer.

4. Once the cables are connected, the computer will automatically search for the USB driver specific to your operating system. If prompted for the location of the driver, enter the drive letter of your CD-ROM drive. Follow the on screen prompts to install the driver.
5. Reboot your computer when prompted.



Note: From time to time, updates to USB drivers become available. After you've completed the installation of your cable modem, it is recommended that you visit the [Ericsson PipeRider](http://www.ericsson.com) Internet site periodically to download the latest version of the drivers.

Note: In the event of an electrostatic discharge (ESD) to the exposed metal surfaces of the cable modem, the USB port may become inoperable. If this occurs, disconnect and then reconnect the USB cable from the back of the cable modem. If this does not restore USB operation to the cable modem, power the modem off and on by unplugging the modem, waiting a minute, and then plugging it back in.

Installation: Ethernet for Windows

Ethernet Setup

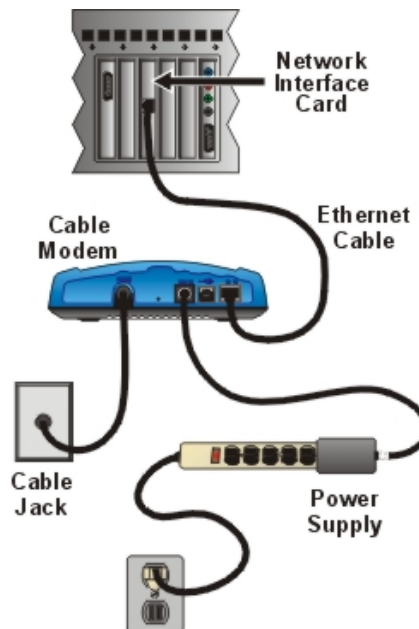
To connect the PipeRider cable modem to your computer through an Ethernet port, the computer must be equipped with a Network Interface Card (NIC) and configured for TCP/IP protocol. The following procedures are provided to assist you in verifying that your Ethernet port is properly configured.

1. **Windows 95/98/NT:** Select Start >> Settings >> Control Panel.
Windows 2000: Select Start >> Settings >> Network and Dial-up Connections.
2. **Windows 95/98:** Double-click the Network icon.
Windows 2000: Double-click the Local Area Connection icon.
Windows NT: Double-click the Network icon, then click the Protocols tab.
3. TCP/IP should be listed as an installed network component. The TCP/IP entry may also include a description of the NIC hardware installed in your computer. If TCP/IP is not listed, you must install TCP/IP protocol on your computer. For installation instructions specific to your operating system, refer to the Help files on your computer. After installing the TCP/IP protocol, continue with step 4.
4. Select TCP/IP from the list, then click Properties. The option Obtain an IP address... should be selected. This setting lets your service provider assign an IP address to your computer.

Equipment Connections

Follow the steps below in the order given:

1. Connect the coaxial cable between the service provider's cable jack and the cable connector on the back of the cable modem. Be sure not to bend the center wire on the connector. Hand tighten both connectors.
2. Connect the Ethernet cable between the 10BT connector on the back of the cable modem and the RJ45 connector on your computer's Network Interface Card (NIC).
3. Plug the DIN connector of the power supply cable into the Power connector on the back of the cable modem. Plug the power supply into a surge protected power source.
4. When power is applied to the cable modem, the modem will enter the power-up diagnostics state to verify the integrity of the hardware and software. To learn more about the states and operation of the PipeRider cable modem, [click here](#).



Installation: Ethernet for Macintosh

To connect the PipeRider cable modem to your Macintosh computer through an Ethernet port, your computer must be equipped with a Network Interface Card (NIC) and configured for TCP/IP protocol.

Ethernet Setup

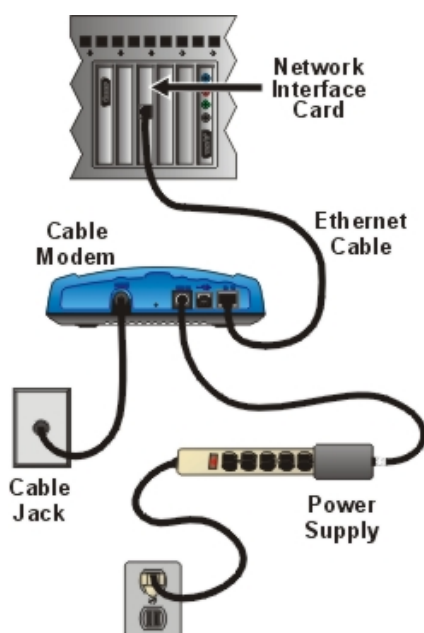
The following procedures are provided to assist you in verifying that your Ethernet port is configured for TCP/IP protocol.

1. Select the Apple menu and then select Control Panels >> TCP/IP. The TCP/IP window will appear.
2. In the Configure list, Using DHCP Server should be selected.

Equipment Connections

Follow the steps below in the order given:

1. Connect the coaxial cable between the service provider's cable jack and the cable connector on the back of the cable modem. Be sure not to bend the center wire on the connector. Hand tighten both connectors.
2. Connect the Ethernet cable between the 10BT connector on the back of the cable modem and the RJ45 connector on your computer's Network Interface Card (NIC).
3. Plug the DIN connector of the power supply cable into the Power connector on the back of cable modem. Plug the power supply into a surge protected power source.
4. When power is applied to the cable modem, the modem will enter the power-up diagnostics state to verify the integrity of the hardware and software. To learn more about the states and operation of the PipeRider cable modem, [click here](#).



Operation

Once the PipeRider cable modem has been properly installed and connected, simply open your Internet browser and you are instantly on-line. No logon procedures are necessary. The cable modem operates automatically and will rarely, if ever, require any intervention from you.

The PipeRider cable modem can be left on at all times. There's no need to turn it on and off, since the [PipeLock®](#) feature assures your security when you are not using the Internet.

To take full advantage of your cable modem, you should also acquaint yourself with the [PipeRider LEDs](#), which indicate the current [operating state](#) of the cable modem and provide useful diagnostic information.

PipeRider LEDs

Looking at the top of the PipeRider cable modem, you'll see five amber-colored light-emitting diodes (LEDs) along the left side of the unit. These LEDs indicate the current state of the cable modem and provide useful diagnostic information. Although the functions of the LEDs depend upon the [operational state](#) of the cable modem, the general purpose of each is described below. Each LED can either be ON (lit), OFF (unlit), flashing at a certain rate, or blinking periodically to indicate activity.



Power

Indicates whether or not there is power to the cable modem. This LED remains ON when the modem is receiving power.



Computer Link

Indicates the status of the link (Ethernet or USB) between the cable modem and your computer. After the Power-up Diagnostics and Initialization have completed, the LED will be ON, and will blink when there is activity on the link. If the link is bad, the LED will be OFF.



Cable Link

Indicates the status of the link between the service provider and the cable modem. After the Power-up Diagnostics and Initialization have completed, the LED will be ON, and will blink when there is activity on the link. If the link is bad, the LED will be OFF.



PipeLock

Indicates the current state of the [PipeLock](#) feature. When PipeLock is enabled, the LED will be ON. When PipeLock is disabled, the LED will be OFF.



Programmable

This LED is reserved for use by the service provider.

Operational States

There are a number of different operational states that the PipeRider cable modem may pass through. Each of these states and its associated LEDs are described below.

Power-Up, Initialization, and Normal Operation

In the Power-up Diagnostics state, the cable modem executes diagnostics to verify the integrity of the hardware and software. This state is entered when the modem is first powered up, after a power cycle, or after a user reset. When power-up diagnostics begin, all of the LEDs turn ON briefly. This allows you to verify that all LEDs are functioning properly. The Power LED remains ON and the remaining LEDs remain OFF while the diagnostics routine completes.

During the Initialization state, the cable modem performs all the steps necessary to register with the system, including finding a downstream channel, downloading the configuration file, downloading new software if necessary, registering with the service provider, and completing Baseline Privacy initialization. This state is entered when the Power-up Diagnostics state successfully completes, when a command to update software is received, or when the downstream channel is lost. Each LED flashes during the progression of its associated initialization stage. When the stage is complete, the LED remains lit. Note: Pressing the PipeLock button during Initialization does not change the PipeLock status.

Some service providers use an alternate operating code for the cable modems on their system. This alternate code results in an initialization LED sequence that differs from that described above. If your modem is running with this code, the initialization LED sequence will appear as follows: The Cable Link LED will flash slowly, and the Computer Link LED will be ON and will blink periodically.

The Normal Operation state is entered when the cable modem completes the initialization process and is ready to begin sending and receiving data. This is the normal state of operation for the modem. During this state, the Cable Link and Computer Link LEDs are normally ON, and blink when there is activity on the respective link.

PipeLock Mode

When PipeLock is enabled, it blocks communication between your computer and your service provider, thus preventing outsiders from accessing information on your computer. For more details, refer to the [PipeLock](#) page.

The PipeLock LED remains ON when the PipeLock feature is enabled. The LED is OFF when PipeLock is disabled.

Access Restricted

When in the Access Restricted state, the cable modem will complete Initialization and respond to Management traffic, but it will not allow data transfer between your computer and your service provider. This is an indication that the service provider is not allowing your cable modem on the system. When the LEDs indicate an Access Restricted state, you should contact your service provider.

During this state, the Cable Link LED flashes slowly. The Computer Link LED is normally ON, and blinks when there is activity.

Fatal Errors

The Fatal Error state is entered when an unrecoverable error, such as a hardware or checksum failure, is encountered. When the LEDs indicate a fatal error, you should power the cable modem off and on by unplugging the modem, waiting a minute, and then plugging it back in. The modem will restart with power-up diagnostics. If the error is still present, contact your Service Provider.

Whenever the Power LED is flashing slowly, this is an indication of a fatal error. Depending upon the error type, one or more of the other LEDs will also flash slowly, in unison with the power LED.

PipeLock®

The PipeLock® feature enables you to suspend communication between the Internet and your computer with the touch of a button. This provides added security when the cable modem is not in use. When PipeLock is ON, the PipeRider cable modem remains logged on, but direct communication between your computer and your service provider is blocked. Since PipeLock doesn't interrupt communication between the cable modem and the service provider network, a second touch of the button instantly restores communication.

To turn PipeLock ON, simply press the PipeLock button located on the top of the PipeRider cable modem. Press the button again to turn PipeLock OFF and instantly regain Internet access. The PipeLock LED will indicate whether PipeLock is ON (LED lit) or OFF (LED unlit) at any point in time.

The PipeLock status will be retained if the PipeRider is reset or if the power is interrupted. That is, if PipeLock is ON just prior to a power interruption or reset, it will return to the ON state when the power-up diagnostics are complete.

PipeRider Cable Modem Product Specifications

| | HM 200c DOCSIS Cable Modem | HM 201c Euro-DOCSIS Cable Modem |
|----------------------------|--|---|
| Downstream | | |
| Frequency Range | 91-858 MHz | 112-858 MHz |
| Bandwidth | 6 MHz | 8 MHz |
| Modulation | 64-QAM or 256-QAM | 64-QAM or 256-QAM |
| Bit Rate | 25 Mbps (64-QAM), 43 Mbps (256-QAM) | 41.7 Mbps (64-QAM), 55.6 Mbps (256-QAM) |
| Forward Error Correction | ITU J.83-B per DOCSIS RFI Sec. 4.3.2. | ITU-T J.83-Annex A |
| Signal Levels | -15dBmV to +15dBmV | 43 dBμV to 73 dBμV (64-QAM), 47 dBμV to 77 dBμV (256-QAM) |
| Upstream | | |
| Frequency Range | 5-42 MHz | 5-65 MHz |
| Bandwidth | 200/400/800/1600/3200 kHz | 200/400/800/1600/3200 kHz |
| Modulation | QPSK or 16-QAM | QPSK or 16-QAM |
| Bit Rate | 0.32-5.12 Mbps (QPSK), 0.64-10.24 Mbps (16-QAM) | 0.32-5.12 Mbps (QPSK), 0.64-10.24 Mbps (16-QAM) |
| Forward Error Correction | Reed-Solomon | Reed-Solomon |
| Signal Level | +8 dBmV to +55 dBmV (16-QAM) or +58 dBmV (QPSK) | 68 dBμV to 115 dBμV (16-QAM) or 118 dBμV (QPSK) |
| Interfaces | | |
| Ethernet | 10Base-T, RJ-45 connector | 10Base-T, RJ-45 connector |
| USB | USB Series B connector | USB Series B connector |
| Cable | RF Input, 75 Ohm F-Connector | RF Input, 75 Ohm F-Connector |
| Mechanical Power | | |
| Dimensions | 43 mm (H) x 216 mm (D) x 178 mm (W) | 43 mm (H) x 216 mm (D) x 178 mm (W) |
| Weight | 454 grams | 454 grams |
| Power | 9 watts | 9 watts |
| Power Supply | External 110-240VAC, 50/60Hz | External 110-240VAC, 50/60Hz |
| Environmental | | |
| Temperature | 0°C to +40°C (operating) -20°C to +65°C (storage) | 0°C to +40°C (operating) -20°C to +65°C (storage) |
| Humidity | 85% non-condensing | 85% non-condensing |
| Regulatory | | |

| | | |
|------------------------|---|---|
| Safety | CE (Directive No. 73/23/EEC, as amended by 93/68/EEC) / EN 60950 +A1,+A2,+A3,+A4,+A11 / IEC950 +A1,+A2,+A3,+A4,+A11 / UL-CSA 1950 3rd Edition / ACA TS 001 | CE (Directive No. 73/23/EEC, as amended by 93/68/EEC) / EN 60950 +A1,+A2,+A3,+A4,+A11 / IEC950 +A1,+A2,+A3,+A4,+A11 / UL-CSA 1950 3rd Edition / ACA TS 001 |
| Emissions | CE (Directive No. 89/336/EEC, as amended by 92/31/EEC and 93/31/EEC) / EN 55022 / EN 50081-1 / CISPR22, Class B / AS/NZS 3548, Class B / FCC Part 15, Class B / ICES-003, Class B / VCCI-3, Class B / CNS 13438 | CE (Directive No. 89/336/EEC, as amended by 92/31/EEC and 93/31/EEC) / EN 55022 / EN 50081-1 / CISPR22, Class B / AS/NZS 3548, Class B / FCC Part 15, Class B / ICES-003, Class B / VCCI-3, Class B / CNS 13438 |
| Immunity | CE (Directive No. 89/336/EEC, as amended by 92/31/EEC and 93/31/EEC) / EN 55024 / EN 50081-2 / CISPR24 | CE (Directive No. 89/336/EEC, as amended by 92/31/EEC and 93/31/EEC) / EN 55024 / EN 50081-2 / CISPR24 |
| Diagnostics Management | | |
| Front Panel LEDs | Power, Cable Link, PC Link, PipeLock®, Programmable | Power, Cable Link, PC Link, PipeLock®, Programmable |
| PipeLock® Button | Top-mounted toggle switch | Top-mounted toggle switch |
| SNMP Management | Full MCNS/ DOCSIS MIB compliance | Full Euro-DOCSIS MIB compliance |
| Security | | |
| Baseline Privacy | Per DOCSIS specifications | Per ITU-T J.112 Annex B |

FAQs

[What is the PipeRider cable modem?](#)

[How do I get started?](#)

[How do I access the Internet with the PipeRider cable modem?](#)

[Can I talk on the telephone while using the PipeRider cable modem?](#)

[Can I watch cable TV while using the PipeRider cable modem?](#)

[With the connection to the Internet always on, I'm concerned about hackers getting into my computer.](#)

[What's the difference between an Ethernet connection and a USB connection?](#)

[Can I connect more than one computer to the PipeRider cable modem?](#)

[If I buy a new computer or change operating systems, will the PipeRider cable modem still work?](#)

[What special care does the PipeRider cable modem require?](#)

[How will a power outage affect the PipeRider cable modem?](#)

[Will the PipeRider cable modem be affected if I have additional devices connected to my computer's USB port?](#)

What is the PipeRider cable modem?

The PipeRider cable modem is an interface device that allows your computer to communicate with the Internet through a CATV cable rather than through a telephone wire. Transferring data over a CATV connection provides many [benefits](#) to you, such as speed, instant access, and independence from your telephone line.

[Return to questions](#)

How do I get started?

Simply follow the [installation](#) instructions, power up your computer, start your web browser, and you're surfing!

[Return to questions](#)

How do I access the Internet with the PipeRider cable modem?

Simply open your browser and you're automatically on-line. There's no more logging on. Whenever your computer is on and your web browser is open, you have instant access to the Internet.

[Return to questions](#)

Can I talk on the telephone while using the PipeRider cable modem?

Yes. Since the PipeRider cable modem does not use telephone lines, the telephones in your house are totally separate and independent from your Internet connection. You're no longer tying up the telephone line when you're surfing.

[Return to questions](#)

Can I watch cable TV while using the PipeRider cable modem?

Yes. Although the cable TV signals travel through the same cable as the Internet signals, they are independent of one another. Your cable TV will work the same as it did before you connected to the PipeRider cable modem, and your Internet connection will not be affected when you watch TV.

[Return to questions](#)

With the connection to the Internet always on, I'm concerned about hackers getting into my computer.

You'll be protected with the PipeRider cable modem [PipeLock](#) feature. When you are not actively using the Internet, you can turn PipeLock on with the touch of a button, making your computer inaccessible to outsiders.

[Return to questions](#)

What's the difference between an Ethernet connection and a USB connection?

Both are data-interface options for connecting your computer to the PipeRider cable modem.

An Ethernet connection requires that an Ethernet card be installed in your computer, and that the computer be configured for TCP/IP. With the addition of an Ethernet hub, multiple computers (up to 15 with Windows) can be connected to a single PipeRider cable modem.

A USB connection can be used if your computer has an available USB port. Although no card installations are necessary with USB, the installation of a USB driver (included on this CD) is required. The USB interface does not allow for more than one computer to be connected to the PipeRider.

[Return to questions](#)

Can I connect more than one computer to the PipeRider?

Yes, if you're using an Ethernet connection (Windows only). You can connect up to 15 computers to the Internet using a single PipeRider cable modem, and enjoy all the benefits of instant access on multiple machines at the same time. Simply plug the cable modem output into an Ethernet network hub, and then wire each computer to the hub. Call your service provider for more details.

[Return to questions](#)

If I buy a new computer or change operating systems, will the PipeRider cable modem still work?

Yes. As long as the operating system is among those supported by the PipeRider cable modem (see [System Requirements](#) for details), you can continue to access the Internet with your cable modem. If you are using a USB data interface and you switch to a new operating system, you may have to install a new USB driver (included on this CD). The computer will automatically search for the correct USB driver. Refer to the [Installation](#) portion of this CD for more details.

[Return to questions](#)

What special care does the PipeRider cable modem require?

Please refer to the [Safety Information](#) section for details.

[Return to questions](#)

How will a power outage affect the PipeRider cable modem?

When the power comes back on, the cable modem will go through its normal power-up and initialization states, and will return to a normal operating state. It is recommended, as with all electronic equipment, that the cable modem power supply is plugged into a power surge protector.

[Return to questions](#)

Will the PipeRider cable modem be affected if I have additional devices connected to my computer's USB port?









Yes, it is possible that the addition of other devices to the USB port could degrade the performance of the cable modem. This is because other devices can use up bandwidth that the cable modem would otherwise be using.

[Return to questions](#)

Troubleshooting

Problem: Cannot connect to the Internet

1. Verify all cables are securely connected to cable modem, computer, and power source. If the power outlet is controlled by a switch, make sure the switch is turned ON. (The PipeRider cable modem should be installed and operated using the cables and power supply provided with the modem. Ericsson does not guarantee performance with any other cables, cable extensions, or power supplies.)
2. If you subscribe to cable TV, check to see if you are receiving a TV signal. If not, this indicates that you are not receiving signals through the cable. Report the problem to your Service Provider.
3. Confirm that your local [Service Provider](#) has established an Internet account for you, and that your provider supports two-way cable modem access.
4. Perform a reset by unplugging the modem, waiting for at least 10 seconds, and then plugging it back in.
5. The LEDs on the top of the PipeRider cable modem may help you narrow down the cause of the problem. It is recommended that you familiarize yourself with the function of the [PipeRider LEDs](#) and the various [operational states](#) of the modem. After the modem has completed the [initialization](#) phase, you can refer to the LED conditions in the table below for troubleshooting assistance.

| LED | | LED Condition | Corrective action |
|---|---------------|---|---|
|  | Power | OFF | Check power cable connection to modem and power source |
|  | Power | Slow Blinking | Unplug modem, wait at least 10 seconds, plug modem back in |
|  | Computer Link | OFF | Check cable connection between modem and computer |
|  | Computer Link | Slow Blinking, in unison with Power LED | Unplug modem, wait at least 10 seconds, plug modem back in |
|  | Cable Link | OFF | Check cable connection between modem and cable jack |
|  | Cable Link | Slow Blinking, in unison with Power LED | Unplug modem, wait at least 10 seconds, plug modem back in |
|  | Cable Link | Slow Blinking, Power LED is ON | Contact service provider; your access may have been restricted |
|  | PipeLock | ON | PipeLock is ON, blocking Internet traffic. To turn PipeLock OFF, press PipeLock button until PipeLock LED is OFF. |

6. If you are using a USB connection:

- Verify that the latest USB drivers are loaded on your computer. Refer to the [USB Installation](#) section for details.
- If the USB connection to the cable modem has never worked, there is a chance that your computer did not properly detect the cable modem during installation. Restarting your system as described below may allow the computer to detect the modem:
 - Perform a normal shutdown of your computer.
 - When it is safe to do so, turn the computer off.
 - After waiting at least 15 seconds, turn the computer back on.

■ During startup, you should see a screen indicating new hardware detection.

- In the event of an electrostatic discharge (ESD) to the exposed metal surfaces of the cable modem, the USB port may become inoperable. If this occurs, disconnect and then reconnect the USB cable from the back of the cable modem. If this does not restore USB operation to the cable modem, you should perform a reset by unplugging the modem, waiting for at least 10 seconds, and then plugging it back in.

7. If you are using an Ethernet connection:

- Check the Network Interface Card for LEDs. Most cards have a "link active" green LED; if one is present, verify that it is ON.
- Verify that the TCP/IP protocol settings are properly configured on your computer. Refer to the [Ethernet Installation](#) section for details.
- If your computer is properly configured and you continue to have problems, it is possible that your Network Interface Card (NIC) is malfunctioning. Refer to the documentation that came with your NIC for troubleshooting tips.

8. If you are unable to solve your problem using the steps above, contact your Service Provider.

Glossary

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| 10BaseT | An unshielded, twisted pair cable with RJ-45 connectors used with an Ethernet LAN. "10" indicates the speed (10 Mbps), "Base" refers to baseband technology, and "T" means twisted pair cable. |
| Asymmetric Scheme | A system in which one spectrum of signal frequencies is assigned to signals moving in one direction and another spectrum of signal frequencies is assigned to signals moving in the opposite direction. Typically, higher frequencies flow downstream and lower frequencies flow upstream. |
| Bandwidth | The range of frequencies that can be transmitted on a communication channel without exceeding loss or distortion limits. Bandwidth indicates the information-carrying capacity of a channel. |
| Baseline Privacy Interface | The baseline privacy interface (BPI) provides cable modem users with data privacy across the cable network by encrypting data traffic between user's cable modem and CMTS. |
| Bridge | An electronic device that provides a logical connection path between two network segments. |
| Browser | A computer program used for accessing the World Wide Web. |
| Cable Modem Termination System (CMTS) | The Cable Modem Termination System (CMTS) is the major component of the headend. It interfaces to the cable network, the backbone data network, and several support systems. The CMTS also controls the configuration, registration, and media access of all the cable modems under its control, and determines who gets to transmit when, and for how long. |
| Cable Network | The system of headend equipment and cables that provides cable service (Internet and/or Television) to individual homes and businesses. |
| CATV | A cable television network system. |
| CMTS | See Cable Modem Termination System |
| Coaxial Cable | Coaxial cable ("coax") allows wide bandwidth transmission over long distances. The coax cable is composed of an inner wire surrounded by an outer conductive shield. |
| Data Interface Connection | The link that provides the communication channel between two or more devices, allowing them to pass data to one another. |
| Decryption | The conversion of a coded (encrypted) signal to its original form, by means of an algorithm. |
| Demodulation | The process of recovering, at the receiver, an original transmitted signal that has been modulated. |
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| DOCSIS | DOCSIS (Data Over Cable Service Interface Specification) defines the interface requirements for cable modems providing data distribution over a cable television network. DOCSIS ensures that a network will work properly when DOCSIS modems made by different vendors are connected to it. |
| Download | The passing of data from the Headend to the computer. |
| Downstream | The direction of a downstream signal is from the headend to the user's computer. |
| Drop Cable | Drop cables connect the feeder cables to customers' homes. |
| Duplex Tuner | A tuner that processes both upstream and downstream signals. |
| Encryption | The scrambling of a signal by means of an algorithm, to prevent unauthorized monitoring of the message. |
| Ethernet | A network technology that uses a bus topology in which all computers on the Ethernet attach to a single cable. |
| Ethernet Card | A plug-in circuit board installed in an expansion slot of the computer. The Ethernet card (also called a Network Interface Card, or NIC) takes parallel data from the computer, converts it to serial data, packets it, and sends it out over a 10BaseT cable. |
| Euro-DOCSIS | Euro-DOCSIS (European Data Over Cable Service Interface Specification) defines the interface requirements for cable modems providing data distribution over a cable television network. Euro-DOCSIS ensures that a network will work properly when Euro-DOCSIS modems made by different vendors are connected to it. |
| Feeder Cable | The feeder cables are branches off the main trunk cable. Feeder cables lead out into different geographic areas serviced by the provider. |
| Headend | The equipment located in the central office of the service provider. The headend connects the cable network to external data networks. |
| HFC | See Hybrid Fiber/Coax |
| Hybrid Fibre/Coax | A cable system where the cables closest to the Headend are fibre technology, and the cables dropped into individual homes are coaxial. Between these two ends, the signal is converted from fibre to coaxial. |
| Hub | A device used to connect multiple computers to the cable modem, using Ethernet technology. |
| Initialization | The steps a device goes through prior to beginning normal operations. |
| Internet | A global collection of interconnected networks used for worldwide computer-based communications. |
| Internet Protocol | Internet Protocol (IP) is a standard that defines the format of packets of information sent over the Internet and the mechanism for routing each packet to its destination. IP is the network portion of TCP/IP. |
| Internet Service Provider | An Internet Service Provider (ISP) is a commercial organization that provides access to the Internet for its subscribers. |

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| IP | See Internet Protocol |
| IP Address | A unique, 32-bit address assigned to every device in a network. An IP address is composed of a network address and a host address. Each network is assigned an address by a government agency, and each company administrator assigns an address to each host computer. |
| ISP | See Internet Service Provider |
| LED | See Light Emitting Diode |
| Light Emitting Diode | A light emitting diode (LED) is a semiconductor device that emits light when voltage is applied between its terminals. |
| MAC | See Media Access Control |
| MAC Address | The physical address of the Media Access Control device. |
| Media Access Control | Media Access Control (MAC) is the protocol governing access to the network. The MAC device is located between receive and transmit paths. Among its functions are the controlling of ranging, the assignment of frequencies, and the allocation of time slots. |
| Modem | A device that encodes (modulates) data from a computer to a carrier wave for transmission across some type of wire, and decodes (demodulates) data coming over the wire to the computer. |
| Modulation | A controlled variation of any property of a carrier wave for transferring data. |
| Network Interface Card | A Network Interface Card (NIC) is a plug-in circuit board installed in an expansion slot of the computer. The NIC (also called an Ethernet card) takes parallel data from the computer, converts it to serial data, packets it, and sends it out over a 10BaseT cable. |
| NIC | See Network Interface Card |
| PipeLock® | A security feature of the PipeRider cable modem that temporarily blocks communication between the computer and the service provider. |
| PipeRider® | An Ericsson cable modem that allows high-speed access to the Internet through a cable network rather than through a telephone wire. |
| Protocol | A set of rules to be followed in order for the various parts of a communication system to operate together. |
| Radio Frequency | Radio Frequency (RF) refers to a specific range of frequencies in the electromagnetic spectrum. Signals in this frequency range can be transmitted through the air or through a wire. |
| RF | See Radio Frequency |
| Router | A system used to connect separate LANs into an internet, and to route traffic between the constituent networks. |
| Server | A type of processor that provides specific services to network users, such as managing file access and managing the exit and entry of information to LAN users. |
| Service Provider | A company that connects networks to the Internet, thus providing Internet service to customers. |
| TCP | See Transmission Control Protocol |

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| TCP/IP | Transmission Control Protocol/Internet Protocol (TCP/IP) is the most commonly used protocol suite for the Internet, which combines TCP and IP. |
| Transmission Control Protocol | Transmission Control Protocol (TCP) is a standard that provides transmission control for applications to ensure reliable delivery of data despite changing network conditions. TCP is the transport layer portion of TCP/IP. |
| Trunk Cable | The main cable that carries signals in and out of the Service Provider building. |
| Two-Way Cable Modem Access | Cable access that allows data to flow in both the upstream and downstream directions. |
| Universal Serial Bus | The Universal Serial Bus (USB) replaces many different types of serial and parallel port connectors with one standard plug and port combination. |
| Upload | The passing of data from the computer to the Headend. |
| Upstream | The direction of an upstream signal is from the user's computer to the headend. |
| URL | The URL (Uniform Resource Locator) is the address of a page of information on the World Wide Web. |
| USB | See Universal Serial Bus |
| Web Browser | A computer program used for accessing the World Wide Web. |
| World Wide Web | The World Wide Web (WWW) is a system used on the Internet, allowing users to view pages of information containing text, graphics, images, sound, video clips and/or references (hyperlinks) to other pages. |

Warranty

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Ericsson Inc. ("the Company") warrants this hardware product, and the Company provided software contained therein ("Product"), against defects in materials and workmanship at the time of purchase or lease and for a period of one year from its original purchase or lease by the end-user.

If, during the warranty period, Ericsson receives notice of the above defined defects under normal use and service, Ericsson will at its option, either repair or replace the Product in accordance with the terms and conditions stipulated herein.

Conditions

If the Company repairs or replaces the Product, the repaired or replaced Product shall be warranted under the limited warranty for the remainder of the original warranty period of the Product or for ninety (90) days, whichever is longer. Repair or replacement may be via functionally equivalent reconditioned parts or units.

This warranty does not cover any failure of equipment not supplied by the Company, nor does this warranty cover failure of the Product due to normal wear and tear, misuse including but not limited to use in other than the normal and customary manner, in accordance with the Company's instructions for use and maintenance of the Product, accident, modification or adjustment, acts of God, improper ventilation or installation and damages resulting from liquid. Since the cable system on which the Product is to operate is provided by a carrier independent from the Company, the Company shall not be liable in any way whatsoever for the operation, availability, coverage, services, or ranges of such system. The Company does not warrant that use of the Product will be uninterrupted or error free.

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Obtaining Warranty Service

Should your Ericsson Cable Modem need warranty service, please contact your service provider.

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Compliances

[United States of America](#)[Canada](#)[European Union](#)[Australia and New Zealand](#)[Japan](#)[Taiwan](#)[International](#)[Export Requirements](#)

United States of America

This product has been tested in accordance to Underwriters Laboratories (UL) standard 1950 3rd Edition and is listed by Underwriters Laboratories for Information Technology Equipment under file number E205735. UL listings can be verified on the Internet at www.ul.com.

This device has been tested and found compliant to the rules and regulations set forth in FCC CFR47 Part 15 Class B Digital Device.

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a different circuit from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING! Any changes or modifications to this product not expressly approved by the manufacturer could void any assurances of Safety or Performance and could result in violation of Part 15 of the FCC Rules.

Canada

This product has been tested in accordance to CSA standard 1950 3rd Edition and is listed by Underwriters Laboratories for Information Technology Equipment under file number E205735. UL listings can be verified on the Internet at www.ul.com.

This Class B digital apparatus complies with Canadian ICES-003.

Canadian Department of Communications Statement

This Digital Apparatus does not exceed the Class B limits for Radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class B digital apparatus complies with Canadian ICES-003.

European Union

Suppliers' Declaration of Conformity

We, ERICSSON HomeCom, hereby claim sole responsibility for and declare that the product listed below, to which this Suppliers' Declaration of Conformity relates, is in conformity with the following EC Directives, Product Standards, and other Normative Documents listed below, and follows the provisions of:

Radio & Telecommunication Terminal Equipment (R&TTE) Directive No. 1999/05/EC

Electromagnetic Compatibility (EMC) Directive No. 89/336/EEC as amended by 92/31/EEC and 93/31/EEC

Low-Voltage Directive (LVD) 73/23/EEC, as amended by 93/68/EEC for CE Marking

Test Laboratory: KTL Ottawa, Ottawa, Ontario (Canada)
Underwriters Laboratories Inc., Northbrook, IL (USA)

Type of product: Data Cable Modem - I.T.E.

Brand name: PipeRider HM200c / PipeRider HM201c
PipeRider HM204c / PipeRider HM205c

Product number: ZAT 510 102/xxxx / ZAT 510 108/xxxx
ZAT 510 112/xxxx / ZAT 510 118/xxxx
ZAT 510 122/xxxx / ZAT 510 128/xxxx
ZAT 510 132/xxxx / ZAT 510 138/xxxx

Intended use: High Speed Internet Data Communications

Place and Date of Issue: Lynchburg, VA, USA, March 2001

1. PRODUCT STANDARDS

The PipeRider Cable Modem conforms to the following Product Standards:

| | |
|--------------|---|
| EMC Emission | EN 55022:1998 Class B, Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment |
| EMC Immunity | EN 55024:1998, Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement |
| LVD Safety | EN 60950:1992 with Amendments A1:1/93; A2:8/93; A3:10/95; A4:3/97; and A11:11/97 |

2. REFERENCES

| | | |
|---------------------------------|---|---|
| EMC Emissions | | |
| | Products: ZAT 510 102/xxxx ZAT 510 108/xxxx ZAT 510 112/xxxx ZAT 510 118/xxxx | Products: ZAT 510 122/xxxx ZAT 510 128/xxxx ZAT 510 132/xxxx ZAT 510 138/xxxx |
| EMC Test Report(s) "Emissions": | MC1309 OR03155 1R03618 | 01NK03061A |
| EMC Test Report(s) "Immunity": | MC1309 OR03155.1 | 01NK03061A |

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| LVD Safety | |
| LVD Safety Test Report(s) | CB Certificate No. US/3799A/UL 99NK36432-120899 |

Australia and New Zealand

This device has been tested in accordance to and found in compliance with the following standards.

- AS/NZS 3548: 1995 Class B
- AS/NZS 3260: 1993 + Supp. 1: 1996
- ACA TS 001-1997

Japan

This device has been tested in accordance to and found in compliance with the following standards.

- VCCI V-3: 1997 Class B

Taiwan

This device has been tested in accordance to and found in compliance with the following standards.

- CNS 13438 (C6357): 1997 Class B

International

This device has been tested in accordance to and found in compliance with the following standards.

- CISPR 22: 1997 Class B
- CISPR 24: 1997
- IEC 950: 1992 +A1, +A2, +A3, +A4, +A11

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